## REMARKS

Reconsideration of this application in view of the above amendments and following remarks is respectfully requested. Claims 66-76 are currently pending. Claims 69-76 are new and are directed to an aspect of the present invention that has not been previously claimed. Claims 67 and 68 have been amended to fix minor typographical errors (namely, to set forth the proper claim dependency). Claim 66 was previously presented and remains unchanged. No new matter has been added.

Support for new claims 69-76 may be found throughout the specification and more specifically at:

Page 4, lines 19-21, that reads:

> In brief, the present invention is directed fuels cells, electrode assemblies, and electrodes that comprise silicon substrates and/or sol-gel derived support structures, as well as to methods relating there (*emphasis added*).

Page 5, lines 11-15, that reads:

> In addition, the plurality of porous regions of the anode may be nanoporous, mesoporous, and/or macroporous, and may comprise an ordered or random array of parallel pores. In addition, the plurality of porous regions of the anode may contain anode pore surfaces, wherein the anode pore surfaces have a catalyst thereon.

Page 5, lines 18-23, that reads:

> The cathode of the electrode assembly may have a plurality of etched or micromachined flow channels (for delivering oxygen or air), and may have a plurality of porous regions that may be nanoporous, mesoporous, and/or macroporous, and may comprise a random array of sponge-like interconnected pores having an open cell structure. In addition, the plurality of porous regions of the cathode may contain cathode pore surfaces, wherein the cathode pore surfaces have a catalyst thereon.

Page 9, lines 1-2, that now reads:

> Figure 11A illustrates a cross-sectional view of an exemplary electrode assembly in accordance with an embodiment of the present invention. As illustrated, the exemplary electrode pair assembly depicts the anode (*i.e.*, an electrode) having a plurality of parallel pores that extend through the support structure.

Together with Figure 11A that shows:

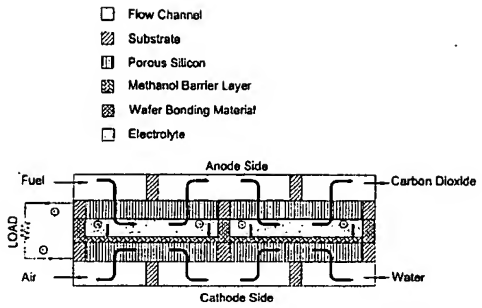


*Fig. 11A*

Page 9, lines 5-6, that now reads:

> Figure 12A illustrates a cross-sectional view of an exemplary electrode assembly in accordance with an embodiment of the present invention. As illustrated, the exemplary electrode pair assembly depicts the anode (*i.e.*, an electrode) having a plurality of parallel pores that extend through the support structure.

Together with Figure 12A that shows:

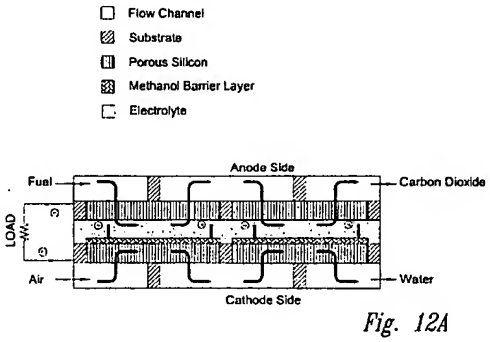


*Fig. 12A*

Page 14, lines 18-23, that reads:

> In other embodiments, the present invention is directed to an electrode adapted for use with a fuel cell, wherein the electrode comprises a silicon substrate and/or a sol-gel derived support structure that functions as a current conductor, and wherein the silicon substrate and/or a sol-gel derived support structure has a plurality of pores that define pore surfaces, and wherein at least a portion of the pore surfaces have a catalyst thereon.

Page 15, lines 25-27, that reads:

> In the several embodiments set forth herein, the inventive fuel cells, electrode assemblies, and electrodes are based, in large part, on novel substrates and support structures that are particularly useful for carrying a catalyst.

Page 16, lines 10-17, that reads:

> Accordingly, and without limitation to any particular methodology, the novel silicon substrates disclosed herein may be made by utilizing standard microelectronic processes such as, for example, alkaline etching, plasma etching, lithography, electroplating, as well as electrochemical pore formation on silicon substrates. In this way, a silicon substrate useful for carrying a catalyst may be produced, wherein the silicon substrate may have any number of pores and pore sizes such as, for example, random and ordered pore arrays-including pore arrays having selected pore diameters, depths, and distances relative to one another.

Page 16, lines 20-23, that reads:

> In short, the present invention is inclusive of all silicon substrates and sol-gel derived support structures, including combinations thereof, that have any number of possible porosities and/or void spaces associated therewith.

Page 17, lines 8-11, that reads:

> As noted above, an aspect of the present invention relates to the use of a silicon substrate for carrying a catalyst, wherein the silicon substrate together with the catalyst serve as an electrode of a fuel cell. Thus, and in one aspect, the present invention is directed to an electrode made from a porous silicon substrate.

Page 17, lines 21-24, that reads:

> In the context of the present invention, it is to be understood that the porous silicon may be nanoporous silicon (*i.e.*, average pore size<2 nm), mesaporous silicon (*i.e.*, average pore size of 2 nm to 50 nm), or microporous silicon (*i.e.*, average pore size>50 nm).

Page 23, lines 7-16, that reads:

> As noted above, an aspect of the present invention relates to a metallic catalyst carried on a silicon substrate and/or a sol-gel derived support structure, wherein the catalyst facilitates oxidation-reduction reactions of a fuel (e.g., hydrogen or methanol) or an oxidant (e.g., oxygen from the air), which reactions occur on each respective electrode of a fuel cell electrode assembly during operation of the fuel cell. In this regard, it is to be understood that the catalyst may be carried on the surface or face of the silicon substrate; and/or the catalyst may be carried on the pore surfaces (i.e., within the bulk matrix of the substrate or support structure) of either a porous silicon substrate or a sol-gel derived support structure (wherein the pore surfaces are also referred to herein as active regions).

Page 24, lines 8-9, that reads:

> [H]owever, a bimetallic platinum:ruthenium catalyst is a particularly active bimetallic catalyst and is therefore preferred (at least with respect to the anode).

With regards to the new claim limitations that recite "a plurality of parallel pores that extend through the support structure," Applicants respectfully submit that Figures 11A and 12A clearly illustrate a flow-through electrode having a plurality of parallel pores that extend through the support structure. Because these new claim limitations lack explicit written antecedent basis

in the written disclosure portion of the application, Applicants have amended the specification by inserting language that directly corresponds to the structure illustrated in Figures 11A and 12A; namely, "an electrode having a plurality of parallel pores that extend through the support structure." Applicants respectfully submit that the amendments to the specification conform with the disclosure illustrated in Figures 11A and 12A (and corresponding steps set forth in the Examples) and are thus in compliance with 37 CFR 1.121. Moreover, Applicants note that information contained in any one of the specifications, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter. *See* generally MPEP §§ 2163.06 and 2163.07(a). Accordingly, Applicants respectfully submit that no new matter has been added.

As way of background, the parent application (*i.e.,* U.S. Application No. 09/715,830 filed November 17, 2000) to the present divisional application issued as U.S. Patent No. 6,641,948 on November 4, 2003. The parent application (and subsequent U.S. patent) discloses and claims several important aspects of the present invention; namely, aspects that relate to an electrode assembly. Importantly, and as noted in the specification on, for example, page 1, lines 10-13, the present invention relates generally to fuel cells and, more specifically, to fuel cells, electrode assemblies, and electrodes that comprise silicon substrates and/or sol-gel derived support structures, as well as to methods relating thereto (*emphasis added*). Applicants in this divisional application now seek allowance of claims to an individual electrode separate and apart from the electrode assembly. It has long been held that it is entirely consistent with the claim definiteness requirements set forth in 35 U.S.C. § 112, second paragraph, to present "subcombination" claims drawn to only one aspect or combination of elements of an invention that has utility separate and apart from other aspects of the invention. *Bendix v. United States*, 600 F.2d 1364, 1369, 204 USPQ 617, 621 (Ct. C. 1979); *Carl Zeiss Stiftung v. Renshawpic*, 945 F.2d 1173, 20 USPQ.2d 1094 (Fed. Cir. 1991). Moreover, and because the parent application discloses and teaches all of the limitations recited in the claims, Applicants had possession of the presently claimed invention and thus satisfy the written description requirement set forth in 35 U.S.C. § 112, first paragraph.

In view of the above amendments and remarks allowance of claims 66-75 is earnestly solicited. A good faith effort has been made to place this application in condition for allowance.

If any further matter requires attention prior to allowance, the Examiner is respectfully requested to contact the undersigned attorney at (206) 381-3100 to resolve the same.

Respectfully submitted,

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